

# 551.506 (261.1) WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

## NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month of July was somewhat above the normal at land stations on the American coast and in the British Isles. It was considerably higher than usual at Swan Island, West Indies, and slightly below normal at St. Johns, Newfoundland, and the Azores.

The number of days on which fog was observed was apparently not far from the normal over the greater part of the ocean.

July is usually the quietest month of the year over the North Atlantic, and the month under discussion was no exception to the general rule, as winds of gale force were not reported on more than two days in any 5° square.

On the 1st there was a well-developed Low central near latitude 45° N., longitude 42° W., the storm area covering a limited region, with northwest winds of a maximum force of 9 in the southwesterly quadrants.

The storm log from the Danish S. S. *Frederick VIII* is as follows:

Gale began on June 30, wind E. Lowest barometer 29.31 inches at 6 a. m. on the 1st, wind WNW., 9; position, latitude 45° 07' N., longitude 43° 30' W. End of gale on the 1st, wind NNW. Highest force of wind 9, WNW.; shifts not given.

From the 2d to the 14th the conditions were comparatively featureless, with light to moderate winds prevailing over practically the entire ocean, except that a few isolated reports were received indicating moderate gales on the 2d and 3d in the mid-section of the southern steamer lanes.

On the 15th a Low surrounded Nova Scotia and Newfoundland, and moderate westerly gales were encountered in the southerly quadrants, between the 37th and 42d parallels. Storm log from the British S. S. *Strathearn* is as follows:

Gale began on the 14th. Lowest barometer 29.98 inches at 2:10 a. m. on the 15th, wind WSW., 6; position, latitude 40° 09' N., longitude 69° 58' W. Same reading at 2 a. m. on the 17th, wind WSW., 8; position, latitude 40° 12' N., longitude 58° 18' W. End on the 17th. Highest force of wind 10, WSW.; shifts WSW.-SW.

On the 15th there was also a moderate disturbance central near latitude 47° N., longitude 17° W. There were no Greenwich mean noon observations from that locality indicating a wind force of more than 6, although the Belgian S. S. *Gothland* encountered a northwesterly gale a little later in the day, as shown by the following storm log:

Gale began on the 15th, wind WNW. Lowest barometer 29.77 inches at noon on the 15th, wind WNW., 8; position, latitude 48° 08' N., longitude 22° 04' W. End of gale on the 16th, wind W. Highest force of wind 8, WNW.; steady from WNW.

On the 16th and 17th the British S. S. *Strathearn*, as shown by her storm log given above, reported a moderate southwesterly gale near latitude 40° N., longitude 58° W. The storm area must have been extremely limited, as vessels in the immediate vicinity experienced only moderate winds.

From the 18th to the 22d there was a second period of inactivity over practically the entire ocean, with uniformly high pressure and weak gradients, although on the 22d and 23d the land station at Lerwick, Scotland, reported westerly winds of about 50 miles an hour. The extent of this disturbance could not be determined, as no ship reports for these dates and that locality have as

yet been received. Charts IX and X show the conditions for the 24th and 25th, respectively. Storm logs follow:

### Danish S. S. *Arkansas*:

Gale began on the 24th, wind NE. Lowest barometer 29.16 inches at 10 a. m. on the 24th, wind N., 10; position, latitude 53° 57' N., longitude 28° 45' W. End of gale on the 25th, wind N. Highest force of wind 11; steady from N.

### British S. S. *Strathearn*:

Gale began on the 24th, wind SSW. Lowest barometer 29.67 inches at noon on the 24th, wind NW., 8; position, latitude 49° 50' N., longitude 24° 50' W. End of gale on the 25th, wind WNW. Highest force of wind 8, shifts SSW-W-WNW.

At Greenwich mean noon on the 27th moderate weather prevailed over the entire ocean, but the following storm log from the American S. S. *Cotati* shows that a disturbance developed shortly afterwards over the eastern section of the steamer lanes:

Gale began on the 27th; wind SSE. Lowest barometer 29.29 inches at 12:15 p. m. on the 27th, wind SSE., 5; position, latitude 44° 48' N., longitude 17° 24' W. End at midnight of the 27th, wind W. Highest force of wind 11; shifts not given.

On the 28th and 29th conditions were somewhat similar to those of the 27th, as at Greenwich mean noon no heavy weather was reported, with the exception of the disturbance over the British Isles that will be referred to later, while intermittent gales were encountered in mid-ocean as shown by the following storm logs:

### British S. S. *Winnebago*:

Gale began on the 28th, wind W. Lowest barometer 29.64 inches at 1 a. m. on the 31st; wind WSW., 8; position, latitude 46° 55' N., longitude 30° 55' W. End of gale on August 1st, wind NNW. Highest force 8; shifts WSW.-NNW. This gale was practically continuous with the wind at force of 7 to 8. In the time between gales the wind never moderated below force of 5 to 6.

### American S. S. *Blair*:

Gale began on the 28th, wind W. Lowest barometer 29.86 inches at 6 p. m. on the 28th. Wind SW., 5; position, latitude 38° N., longitude 49° 15' W. End of gale on August 1, wind SW. Highest force 8, SW.; shifts not given.

On the 29th there was a well-developed Low central near London. The storm log from the American S. S. *Hattie Luckenbach* that was near the center on that date follows:

Gale began on the 29th, wind W. Lowest barometer 29.56 inches at 4 a. m. on the 29th, wind SW., 9; position, latitude 51° 10' N., longitude 1° 43' E. End of gale on the 29th, wind WNW. Highest force of wind 9; shifts SSW.-SW.-W.-NW.

On the 30th and 31st moderate southwesterly gales swept a limited area between the 35th and 42d parallels and the 55th and 63d meridians. The storm log from the American S. S. *Westwego* follows:

Gale began on the 29th, wind SW. Lowest barometer 29.88 inches, at 2 a. m. on the 31st, wind SW., 7; position, latitude 39° 57' N., longitude 58° 35' W. End of gale on the 31st. Highest force of wind 8 shifts WSW.-NNW.

# 551.506 (265.2) NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

Pressure at Dutch Harbor was generally, though not continuously, above normal during the first half of the month, the daily excess being approximately 0.15 inch. The highest pressure, 30.34 inches, occurred on the 4th and 5th. During the latter half it was below normal by an average of about 0.28 inch. The lowest pressure,

29.26 inches, was recorded on the 26th, being 0.86 inch below the normal for that date. At Midway Island pressure was below normal during the first week by a daily average of 0.08 inch and above normal thereafter, except on the 19th, by an average of 0.07 inch. At Honolulu pressure was very generally below normal during the first half of the month and above during the last half, the departures as a rule being small.

The month opened with a typhoon forming in the region to the eastward of the Philippines. On the 4th this typhoon passed a few miles to the north of Manila, thence across the China Sea and the Gulf of Tongking, entering Tongking on the 7th.<sup>1</sup>

The opening days of the month also witnessed a northwesterly gale off the California coast of the United States, due to the southeastward movement of the high pressure area noted at Dutch Harbor on the 4th and 5th. Reports of this gale from vessels that were involved are as follows:

British S. S. *Ben Venue*, Capt. C. Marsh, Observer D. McGiepe, Portland (June 30) for Panama.

Gale began on the 1st, wind N. by W.; lowest barometer 29.87 inches at 5 a. m. of 2d in latitude 37° 53' N., longitude 123° 53' W., wind NNW., 9; end of gale on 2d, wind NNE.; highest force 10, NNW.; shifts, N. to WNW.

American S. S. *Stockton*, Capt. S. Rustad, Observer G. Flyeum, Los Angeles (June 30) for Honolulu.

Moderate gale from NNW. set in at 8 p. m., June 30, hauling to N. by noon of July 1 and continuing for next 20 hours; wind then hauled to NE., force 7-8; a large sea, shifting with the change of wind, was running and vessel shipped the heaviest seas recorded in 10 months' service across the Pacific. Barometer at noon (G. M. T.) on 30th, 29.77 inches, noon of 1st, 29.94 inches. Position on latter date, latitude 32° 47' N., longitude 124° 40' W.

American Bark *Moshula*, Capt. F. O. Parker, Newcastle (Australia), via Manila, for San Francisco.

-July 1, latitude 38° 25' N., longitude 130° 24' W., hard gale set in from N. and continued until the 3d; on the 2d reached force 11, NNW., with a heavy sea; on 3d split foresail; position on 3d, latitude 33° 34' N., longitude 128° 05' W. Barometer remained high during gale.

The American Army transport *Buford*, Capt. L. R. M. Kerr, Observer Oscar A. Littchen, Honolulu for San Francisco, was involved in this gale from the afternoon of the 1st to the morning of the 3d. The wind reached force 8, from the NW. Position at noon (G. M. T.) on 2d, latitude 36° 46' N., longitude 125° 53' W.

From the 9th to the 11th the U. S. revenue cutter *Bear*, Capt. C. S. Cochran, Observer R. T. McElligott, experienced a southeasterly gale while cruising in Alaskan waters. Following is the report from the *Bear*:

Gale began on the 9th, wind SE.; lowest barometer 29.70 inches at 6 p. m., same date, in latitude 65° 57' N., longitude 170° 06' W. end of gale on the 11th; highest force of wind, 9, SE.; shifts, 4 points.

On the 21st and 22d (Asiatic time) the Japanese S. S. *Korea Maru*, Capt. M. Jin, Observer H. Shimmura, Yokohama for Honolulu, had a moderate to fresh easterly gale. This was near latitude 30° N., longitude 177° E.-177° W. Highest force of wind 8, ESE.; lowest barometer 29.87 inches, at 4 p. m. of the 21st, in latitude 30° 20' N., longitude 179° 20' E.

On the 14th a second typhoon formed in the region between the Philippine Islands and Ladrone Islands, whence it moved in a northwesterly direction through the Balintang Channel, the China Sea, and the northern part of the Gulf of Tongking.

An unusual amount of fog was reported during the month by vessels on the northern steamship routes.

## TWO TYPHOONS OVER THE PHILIPPINES, JULY 4 AND 22, 1921.

By JOSÉ CORONAS, S. J., Chief, Meteorological Division.

[Weather Bureau, Manila, P. I., July 30, 1921.]

551.515 (914)

Two well-developed typhoons have visited the Philippine Islands during this month of July—one near Manila on July 4, and the other through the Balintang Channel near the Batan and Babuyan Islands on July 22.

*Typhoon of July 4.*—This typhoon was hardly shown by the observations of Guam and Yap. It is only with very slight probability, based on the winds prevailing at Yap in July 1, that we may suppose that the typhoon was formed on that day between 14° and 15° latitude N. and in about 132° or 133° longitude E. It seems, however, certain that it did not form east of the meridian 135°, but rather to the west of same. In other words this typhoon belongs to the type of those that form nearer to the Philippines than to the Ladrone Islands. As the extent of the typhoon was rather small, its existence could not be noticed in our weather maps until the morning of July 3, when the first warnings were issued by Manila Observatory. The approximate position of the center at 6 a. m. of the 3d was 126° longitude E. and 14° 30' latitude N.

The center of the typhoon passed a few miles to the north of Manila moving almost due west at 1:45 p. m. of July 4, when the barometric minimum 745.50 mm. (29.35 inches) was recorded. A gale from NW. backing to SW. and S. blew for about six hours (from 11 a. m. to 5 p. m.) doing considerable damage to the city. The highest velocities of the wind recorded in the most violent gusts were 75 miles per hour at 1:28 p. m., and 63 miles per hour at 1:53 p. m. No vortical calm was observed in Manila, but relative calm lasting from 20

minutes to 1 hour was reported from practically all the towns situated from 5 to 25 miles north of Manila. The greatest damage of the storm was done to the Provinces of Rizal, Bulacan, Pampanga, and Bataan. The center traversed Tayabas Province near Polillo and Infanta, the northern part of Rizal Province, the southern part of Bulacan, Pampanga, and Zambales Provinces, and the northern part of Bataan Province. The rate of progress of the typhoon while crossing the Philippines was 8 miles per hour.

In the China Sea, the typhoon increased its rate of progress and inclined northwestward, thus crossing the Paracel Islands in the morning of the 6th, and traversing the Gulf of Tongking and entering Tongking on the 7th.

*Typhoon of the "Nauqus:" July 22.*—We call this the typhoon of "*Nauqus*" because this steamer was almost caught in its center in the China Sea, July 23, with a barometric minimum as low as 715 mm. (28.15 inches). The position of the "*Nauqus*" at noon of the 22d was 21° 30' latitude N. and 118° 54' longitude E., and at noon of the 23d, 18° 59' latitude N. and 116° 44' longitude E. The barometric minimum was observed at 8 a. m. of the 23d. The steamer was on her way from Dairen to Batavia; all the superstructure, life boats, and ventilators were damaged, but the hull and the machinery remained intact.

The steamer "*Loong Sang*," on her way from Hongkong to Manila, felt also the fury of the storm in the China Sea, the barometer having fallen to 735.57 mm. (28.96 inches) at 4 p. m. of the 23d.

<sup>1</sup> See article below regarding typhoons of July, 1921, by Rev. José Coronas, S. J.